

ELECTRONIC TUBE REFERENCE

M505

Specialized - Magnetron electronic tube

CONSOLIDATED TECHNICAL DATA
1 SECTION
CONSTRUCTION
MAGNETRON

Fixed-frequency pulse magnetron intended for short-duration high-peak-power microwave generation.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	3.5 V / 3.5 A	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Magnetron
No fixed ratings recorded. Promoted values mapped from printed rating/approximate-data tables; additional operating points and capacitances retained as parameters.

Fixed frequency pulse magnetron

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1955 Marconi

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1955 MARCONI

Section 1 · Magnetron

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Starting Heater Voltage Minimum	3.3 V	—
Starting Heater Voltage Maximum	3.7 V	—
Heater Voltage at Maximum Input	2 V	—
Heater Current at 3V	3.5 A	—
Frequency Minimum	9360 MHz	—
Frequency Maximum	9460 MHz	—
Tuning Pulling Range	14 MHz	—
Rate of Rise of Voltage Maximum	100 kV/us	—
Duty Cycle Maximum	0.001	—
Magnetic Field Minimum	3200 Oe	—
Magnetic Field Maximum	3300 Oe	—
Input Power Maximum	150 W	—
Peak Anode Current Maximum	12 A	—
Pulse Duration Maximum	1 us	—
Anode Temperature Maximum	140 C	—
Typical Peak Anode Voltage	12 kV	—
Typical Peak Anode Current	12 A	—
Typical Magnetic Field	3250 Oe	—
Typical PRF	1000 pps	—
Typical Peak Output Power	60 kW	—

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1971 English Electric Valve

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1971 ENGLISH ELECTRIC VALVE

Section 1 · Magnetron

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Frequency range	9460 MHz	Frequency range 9360 to 9460 MHz
Typical peak output power	45 kW	Typical peak output power 45 kW
Heater current at 3.0V	3.5 A	Heater current at 3.0V . 3.5 A
Cathode heating time (minimum)	20 s	Cathode heating time (minimum) 20 s
Anode voltage (peak)	16 kV	Anode voltage (peak) 10 16 kV
Anode current {peak}	12 A	Anode current {peak} — 12 A
Pulse length	2	Pulse length - 2.0 MS
V.S.W.R. at the output coupler	1 V	V.S.W.R. at the output coupler . — 1.6:1
Heater voltage	1.5 A	Heater voltage . 1.5 A
Anode current (peak)	12	Anode current (peak) 12 A
Pulse length	1	Pulse length 1.0 us
Pulse repetition rate	1000 s	Pulse repetition rate 1000 p.p.s.
Anode voltage {peak}	1.1 kV	Anode voltage {peak} 1.1 kV
Output power (peak)	45 kW	Output power (peak) 45 kW
Output power {mean}	45 W	Output power {mean} 45 W
Heater voltage (fortest)	1.5	Heater voltage (fortest) . 1.5 1.5 1.5 \%
Anode current {mean}	12 mA	Anode current {mean} . . 12 12 12 mA
Anode voltage (peak)	12.5 kV	Anode voltage (peak) .10.5 12.5 - - - - kV
Output power {mean} . 35	35 W	Output power {mean} . 35 — - - - W
Frequency pulling	15 MHz	Frequency pulling . . — — — 15 — — MHz
Output power (mean)	28 W	Output power (mean) 28 W min

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
R.F. bandwidth at % power (Oscnlaun2)	3 MHz	R.F. bandwidth at % power (Oscnlaun2) .. 3.0 MHz max
Frequency	9460 MHz	Frequency . 9360 to 9460 MHz
1. With no anode input power.	1	1. With no anode input power.
imum capacitance of 4000pF shunted across the heater directly at the	4000	imum capacitance of 4000pF shunted across the heater directly at the
input terminals; in some cases a capacitance as high as 2uF may be nec-	2 a	input terminals; in some cases a capacitance as high as 2uF may be nec-
teading edge of the voltage pulse above 80% amplitude. Any capaci-	80	teading edge of the voltage pulse above 80% amplitude. Any capaci-
At anode temperature 25°C	25 °C	At anode temperature 25°C.
The maximum bandwidth in MHz is given by 3.0/(pulse length in us)	3 MHz	The maximum bandwidth in MHz is given by 3.0/(pulse length in us).
The mean anode current is varied between 12 and 14mA	14	The mean anode current is varied between 12 and 14mA.
of the number of input pulses applied during this 30 second period	30	of the number of input pulses applied during this 30 second period.
Pulses are definea as missing when the r.f. energy level is less than 70%	70	Pulses are definea as missing when the r.f. energy level is less than 70%
of the normal energy level in the frequency range 9360 to 9460MHz	9460	of the normal energy level in the frequency range 9360 to 9460MHz.
11	11 a	11. When a signal of the same frequency as the valve operating frequency is
The v.s.w.r. is tested to be greater than 6:1 and its phase such that a	1 v	The v.s.w.r. is tested to be greater than 6:1 and its phase such that a
12	15	12. Over the range 8 to 15mA, no pulses shall be missing when viewed with
13	3	13. Measured with heater voltage of 3.0V and no anode input power, the
heater current limits are 3.0A minimum, 4.0A maximum	4	heater current limits are 3.0A minimum, 4.0A maximum.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
14	14	14. Design test only. The maximum frequency change with anode tempera-
2. The common cathode connection is indicated by a letter 'C' on this	2 a	2. The common cathode connection is indicated by a letter 'C' on this

TUBE TINKER

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